



MS APPEAL BRIEF - PATENTS  
PATENT  
3273-0153P

IN THE U.S. PATENT AND TRADEMARK OFFICE

In re application of Before the Board of Appeals  
ISHII, Yasutaka et al. Appeal No.:  
Appl. No.: 10/092,554 Group: 1626  
Filed: March 8, 2002 Examiner: SHIAO, R.T.  
Conf.: 1456  
For: CATALYST COMPRISING A CYCLIC IMIDE  
COMPOUND AND PROCESS FOR PRODUCING  
ORGANIC COMPOUNDS USING THE CATALYST

APPEAL BRIEF TRANSMITTAL FORM

**MS APPEAL BRIEF - PATENTS**  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

April 8, 2005

Sir:

Transmitted herewith is an Appeal Brief on behalf of the Appellants in connection with the above-identified application.

The enclosed document is being transmitted via the Certificate of Mailing provisions of 37 C.F.R. § 1.8.

A Notice of Appeal was filed on February 9, 2005.

Applicant claims small entity status in accordance with 37 C.F.R. § 1.27

The fee has been calculated as shown below:

Extension of time fee pursuant to 37 C.F.R. §§ 1.17 and 1.136(a) - \$0.00.

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Please charge Deposit Account No. 02-2448 in the amount of \$0.00. A triplicate copy of this sheet is attached.

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Respectfully submitted,

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Attachment(s)



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**BRIEF ON APPEAL**

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Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

April 8, 2005

Sir:

This is an appeal from the 10 August 2004 Final Rejection of claims 3 and 4. A Notice of Appeal was filed on February 9, 2005.

**(i.) Real Party in Interest.** The real party in interest in this appeal is DAICEL CHEMICAL INDUSTRIES, LTD., the Assignee of the present application.

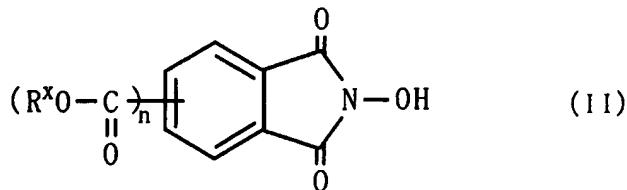
**(ii.) Related Appeals And Interferences.** There are no related appeals or interferences.

**(iii.) Status Of Claims.** Claims 5-9 are cancelled. In the outstanding Final Rejection, claims 3 and 4 were rejected, and objection was raised to claims 1, 2, and 10-14. However, in an Advisory Action mailed February 16, 2005, in addition to confirming the rejection of claims 3 and 4, the Examiner indicates that claim 10 is rejected under the second paragraph of 35 U.S.C. §112.

**(iv.) Status Of Amendments.** On 10 January 2005, Applicants filed an 'Amendment under 37 CFR 1.116', in which they proposed canceling claims 1-3 and amending claim 4. In an Advisory Action mailed February 16, 2005, the Examiner refused to enter the proposed Amendment.

**(v.) Summary Of Claimed Subject Matter.**

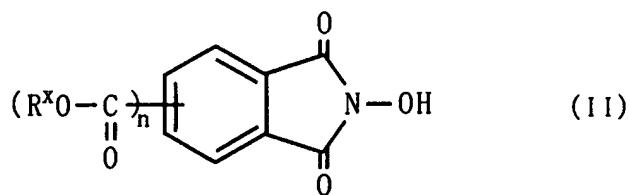
In claim 10, the present invention provides a catalyst that comprises a cyclic imide compound represented by Formula (II):



wherein R<sup>x</sup> is a hydrocarbon group having five or more carbon atoms; and n denotes an integer of from 1 to 4, where the groups -C(=O)-OR<sup>x</sup> may be the same or different when n is equal to or

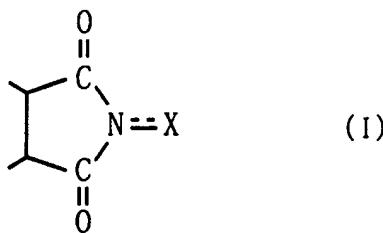
more than 2. See the specification: page 8, first full paragraph; the paragraph bridging pages 17-18; and page 18, first full paragraph.

In claim 3, the present invention provides a catalyst that has a solubility parameter of less than or equal to 26 (MPa)<sup>1/2</sup> as determined by Fedors method and that comprises a cyclic imide compound represented by Formula (II):



wherein R<sup>x</sup> is a hydrocarbon group having five or more carbon atoms; and n denotes an integer of from 1 to 4, where the groups -C(=O)-OR<sup>x</sup> may be the same or different when n is equal to or more than 2. See the specification: page 8, first full paragraph; the paragraph bridging pages 10-11; and the paragraph bridging pages 16-17.

In claim 4, the present invention provides a catalyst comprising a metallic compound and a cyclic imide compound, the cyclic imide compound having an N-substituted cyclic imide skeleton represented by Formula (I):



wherein X is an oxygen atom or a hydroxyl group, wherein said catalyst has a solubility parameter of less than or equal to 26 (MPa)<sup>1/2</sup> as determined by Fedors method. See the specification: page 7, first full paragraph; the paragraph bridging pages 10-11; and page 21, 3<sup>rd</sup> line - page 28, 3<sup>rd</sup> line.

***(vi.) Grounds Of Rejection***

Claim 10 is rejected as failing to define the invention properly under the second paragraph of 35 U.S.C. §112.

Claims 3 and 4 stand rejected on the ground of obviousness-type double patenting over claims 4 and 7-9 of US 6,232,258 B1.

It is noted that EP 0878234 A2, which was published on 18 November 1998, corresponds to US 6,232,258 B1. Therefore, if the disclosure in question were truly relevant to the present invention, a rejection could be made under 35 U.S.C. §§ 102 and/or 103. However, the Examiner has correctly not rejected any of the claims in this application over EP 0878234 A2.

**(vii.) Argument.**

*Claims 3 and 4*

According to MPEP 804, "[a]ny obviousness-type double patenting rejection should make clear:

- (A) The differences between the inventions defined by the conflicting claims - a claim in the patent compared to a claim in the application; and
- (B) The reasons why a person of ordinary skill in the art would conclude that the invention defined in each of the claims of the application is an obvious variation of the invention defined in a claim in the patent."

MPEP 804, 800-22, August 2001. Point (A) is addressed immediately below. Point (B) is addressed on page 7 herein.

The invention described in the '258 patent resides in (i) a catalyst composition for **oxygenating a bridged cyclic hydrocarbon with oxygen** and (ii) a catalyst consisting of a strong acid and an imide compound represented by one of formulae (1a), (1b), (1c), (1d), (1e), and (1f). The effect of the invention claimed in the '258 patent is that the bridged cyclic hydrocarbon can provide a ketone with a high rate of conversion and selectivity. See column 14, lines 1-19 and the Examples of the '258 patent. In contrast, a catalyst of the present invention comprises a cyclic imide compound represented by the formula (II) - that is, an N-hydroxyphthalimide having a -C(=O)-OR<sup>x</sup> group on its benzene

ring, where  $R^x$  is a hydrocarbon group having five or more carbon atoms.

Differences between the two claimed inventions include the following:

- in the '258 patent, the catalyst composition oxygenates only a bridged cyclic hydrocarbon, while in the present invention the substrates are not limited; and
- the '258 patent includes as catalysts cyclic imide compounds represented by formulae (1a), (1b), (1c), (1d), (1e), and (1f), while the catalysts of the present invention are not "cyclic imide compounds" broadly but only N-hydroxyphthalimides having a certain structure with a  $-C(=O)-OR^x$  group on the benzene ring, where  $R^x$  is a hydrocarbon group having five or more carbon atoms.

It is noted that the '258 patent teaches that regarding alkoxy carbonyl groups in the substituent  $R^3$ ,  $R^4$ ,  $R^5$ , and  $R^6$  of its formula (1c), one to four carbon atoms in the alkoxy moiety are preferred. Column 4, line 66 to column 5, line 2. In other words, the reference does not recognize the advantage of an N-hydroxyphthalimide having a hydrocarbon group having five or more carbon atoms in any alkoxy carbonyl substituent on the benzene ring, not to mention the fact that the '258 patent has no description to suggest that such compounds exhibit high catalytic activity **even in the absence of a strong acid** and exhibit an

excellent catalytic activity specifically in the absence of solvents or in the presence of low-polar solvents.

Thus the invention of the '258 patent and the present invention manifestly have very different objectives and significantly different ways of achieving those objectives.

In accordance with the '258 patent, the bridged cyclic hydrocarbon can provide only a ketone, albeit with high conversion and selectivity. In contrast, ***the catalyst of the present invention can be used in a variety of radical reactions.*** The present reaction proceeds smoothly even in the absence of solvents or in the presence of low-polar solvents and therefore has a markedly improved reaction rate. Specification, page 28, line 13 to column 29, line 1.

Furthermore, the invention of the '258 patent aims to increase yields of ketone by using a strong acid, while the present invention comprises a catalyst which can be used without a strong acid and even in low-polar solvents. Substrates of Examples 1 to 8 in the '258 patent are adamantane, which is a bridged cyclic hydrocarbon, whereas substrates used in the examples of the present application are cyclohexane in Examples 1 to 8, 2-octanol in Example 9, toluene in Example 10, and n-hexane in Example 11. A key feature of the present invention is that ***the present catalyst is effective in various reactions using***

**various substrates.** It is manifest that the present invention is directed to a different objective than is the '258 patent.

As demonstrated above, the present invention and the invention of the '258 patent clearly differ in both structure and effect. The '258 patent fails to suggest the above-mentioned structure or effects of the present invention. Accordingly, claims 3 and 4 should not be rejected on the ground of obviousness-type double patenting over claims 4 and 7-9 of US 6,232,258 B1. If the Examiner should believe otherwise, he is respectfully requested to (B) state explicitly the reasons why a person of ordinary skill in the art would conclude that the invention defined in each of the claims of the present application that allegedly constitutes double patenting is an obvious variation of the invention defined in a particular claim in the '258 patent.

*No anticipation or obviousness.* The preceding double patenting analysis focuses on the claims of US 6,232,258 B1. However, it is also Applicants' position that the corresponding disclosure of EP 0878234 A2 neither anticipates nor renders obvious the invention of any of claims 1-4 and 10-14.

**Claim 10**

Claim 10 is rejected under the second paragraph of 35 U.S.C. §112 as failing to define the invention properly. The Examiner

has pointed out that claim 10 describes a catalyst compound which can be used in the presence of promoters (or "co-catalysts"). This feature of the present invention is discussed in detail on pages 21-28 of the specification. Indeed, claim 4 herein expressly recites an instance of this aspect of the present invention. The Examiner has failed to explain, however, how this fact - that the catalyst compound of the present invention can be used in the presence of promoters - renders the claims herein indefinite or otherwise fails to satisfy 35 U.S.C. §112.

The variable R<sup>x</sup> in claim 10, which is a hydrocarbon group having five or more carbon atoms, is sufficiently defined by the description in the specification from line 14 on page 17 through line 5 on page 18. Preferred examples of cyclic imide compounds for use in the catalyst of the present invention are exemplified in the specification from line 6 on page 18 through line 11 on page 20. The rejection under 35 U.S.C. §112 should be withdrawn.

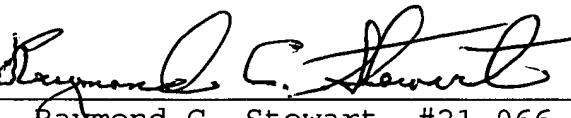
Conclusion

The Examiner and the Board of Patent Appeals and Interferences are invited to contact Richard Gallagher (Reg. No. 28,781) at (703) 205-8008 with any questions concerning this application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and further replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fee required under 37 CFR 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

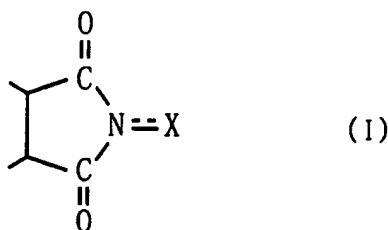
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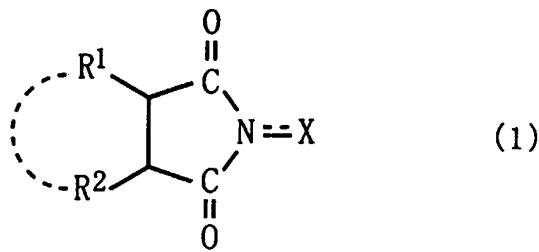
(viii) *Claims Appendix.* Claims 3, 4, and 10 have been indicated by the Examiner to be rejected. Claims 1 and 2 are set forth in this Claims Appendix in order to facilitate understanding of rejected claims 3 and 4.

1. A catalyst comprising a cyclic imide compound, the cyclic imide compound having an N-substituted cyclic imide skeleton represented by following Formula (I):



wherein X is an oxygen atom or a hydroxyl group, wherein said catalyst has a solubility parameter of less than or equal to 26 (MPa)<sup>1/2</sup> as determined by Fedors method.

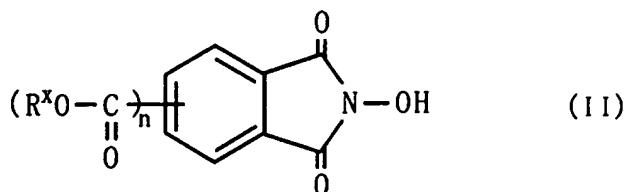
2. The catalyst according to claim 1, wherein the cyclic imide compound is a compound represented by following Formula (1):



wherein R<sup>1</sup> and R<sup>2</sup> are the same or different and are each a hydrogen atom, a halogen atom, an alkyl group, an aryl group, a cycloalkyl group, a hydroxyl group, an alkoxy group, a carboxyl group, a substituted oxycarbonyl group,

an acyl group or an acyloxy group, where R<sup>1</sup> and R<sup>2</sup> may be combined to form a double bond or an aromatic or non-aromatic ring; one or two of N-substituted cyclic imido group indicated in Formula (1) may be further formed on R<sup>1</sup>, R<sup>2</sup>, or on the double bond or aromatic or non-aromatic ring formed by R<sup>1</sup> and R<sup>2</sup>; and X is an oxygen atom or a hydroxyl group.

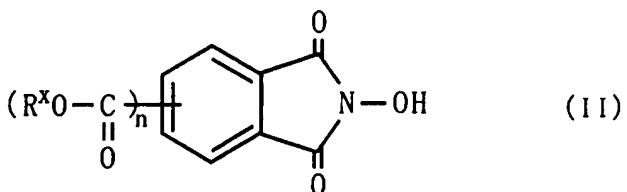
3. The catalyst according to claim 2, wherein the cyclic imide compound is a compound represented by following Formula (II):



wherein R<sup>x</sup> is a hydrocarbon group having five or more carbon atoms; and n denotes an integer of from 1 to 4, where the groups -C(=O)-OR<sup>x</sup> may be the same or different when n is equal to or more than 2.

4. The catalyst according to any one of claims 1 to 3, further comprising a metallic compound.

10. A catalyst comprising a cyclic imide compound represented by following Formula (II):



wherein  $R^x$  is a hydrocarbon group having five or more carbon atoms; and  $n$  denotes an integer of from 1 to 4, where the groups  $-C(=O)-OR^x$  may be the same or different when  $n$  is equal to or more than 2.

**(ix) Evidence Appendix.** None.

**(x.) Related Proceedings Appendix.** None.